

## REMARKS

The Examiner's comments have been carefully studied. Favorable reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Claims 1, 3 to 7, and 9 were previously pending in the application and have been finally rejected. Claims 1 and 7 herewith are amended. New claim 10 has been added. Claims presently active are, therefore, claims 1, 3 to 7, and 9 to 10. Favorable reconsideration of the application in view of the following remarks is respectfully requested.

Claim 1 has been very slightly amended to merely clarify the obvious intent of the claims. Since these amendments raise no new issues, entry of the amendment to Claim 1 is believed appropriate.

The Examiner states that all outstanding rejections are overcome by Applicants' amendment filed 1/26/06. The only new grounds of rejection is under 35 USC §112.

Claims 1, 3-7, and 9 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner states that claim 1 has been amended to recite "wherein no monomer is present in the aqueous pigment mixture." The Examiner states that the cited phraseology clearly signifies a negative or exclusionary limitation for which the Applicants have no support in the original disclosure. The Examiner notes that as support for such amendment, Applicants point to page 6 of the present specification, which discloses: "under prior art method either no initiator is used or, when used, it is added to the colorant mixture with monomer and not, as in the present invention, initiator with monomer is added before adding the monomer mixture." The Examiner states, however, that this portion of the present specification refers to the *initiator* having no monomer, not the *aqueous pigment mixture*. The Examiner alleges that, thus, while this portion of the specification as originally filed provides support to recite that the initiator is without monomer, it does not provide support to recite that there is no monomer present in the aqueous pigment mixture.

Applicants respectfully traverse this rejection. It is submitted that support for the negative limitation in question is well supported by the original specification when a fair reading is granted to the original disclosure. The

Examiner fails to read the application as a whole, referring only to a single isolated portion thereof. In addition to the quoted support, the present application also states, again on page 6, but on lines 1-6, that a first portion [emphasis added] of the initiator is added to the aqueous colorant mixture before introducing a monomer mixture which is used to form the polymer phase of the composite colorant particles.” Hence, logically, essentially no monomer can be present in the aqueous colorant mixture when the polymerization initiator is added. Furthermore, the Examiner fails to consider a statement, again on page 6 but on other lines, that is quite relevant to the claimed invention:

The present invention uses a special sequence of adding the initiator—that is, a portion is added to the colorant mixture prior to adding the monomer mixture. This sequence allows the radicals formed from the initiator during heating to be absorbed to the colorant surface; hence, when the monomer mixture is added later, the monomers will polymerize on the colorant surface rather than form separated polymer particles.

Thus, it is very clear and logical that monomer is added only after the initial initiator is added and, hence, no monomer can be present in the aqueous pigment mixture before adding the initial initiator. Still further evidence of this view, lending further confirmation, is provided by each and every example in the specification.

In view of the fact that a fair reading of Applicants’ disclosure provides support for the previous amendment in question, and further in view of the fact that the amendment in question goes to the heart of the invention and distinguishes from the prior art, and further in view of the absence of any constructive suggestion whatsoever from the Examiner as to alternative or preferred wording that would be acceptable for patentability, the Applicants respectfully submit that the rejection under 35 USC §112 should be withdrawn.

In any case, Applicants submit a new claim 10 in which the phrase in question has been replaced by the phrase “wherein sequential addition of initiator to the pigment mixture essentially prior to adding monomer mixture to the pigment mixture allows radicals formed from the initiator to be absorbed to pigment surface and, when monomer mixture is added later, provides polymerization on the pigment surface rather than the formation of separated

polymer particles,” as supported by page 6, lines 9-14, of the present specification.

In paragraph 4 of the Office Action, the Examiner discusses the 1.132 declaration. As indicated by the Examiner, since all prior art rejections have been withdrawn, the 1.132 declaration is not relevant. In other words, as stated by the Examiner, the cited prior art to Lin is not applicable against the present claims and, thus, the declaration is not necessary to overcome the rejections of record utilizing Lin. However, for the record, Applicants will respond to the Examiner’s comments.

To briefly review, the Applicants submitted a declaration from Dr. Reczek describing an example that is similar to Examples VIB and IX wherein Lin discloses adding a (i) mixture of water, pigment, monomer, and initiator to (ii) mixture of monomer. The results clearly showed that the resulting particles are not stable and do not meet the requirements of amended claim 1. This example also shows that “the additional ingredients in the prior art, i.e. monomer, would in fact be excluded from the claims and that such ingredients would materially change the characteristics of the Applicant’s invention.” This evidence, not only is relevant to the unobviousness of the present invention over what the Examiner explicitly considers the closest prior art, but supports Applicants’ interpretation that the phrase “consisting essentially of” with respect to the first portion of initiator cannot include monomer such as disclosed by Lin.

The Examiner stated that the declaration is not commensurate in scope with the prior art (Lin). Specifically, the Examiner states that declaration does not prepare composite colorant particles comprising monomer in the aqueous pigment mixture (as does Lin), but rather adds monomer (and initiator) to an already prepared pigment dispersion. The Examiner, therefore, alleges that contrary to the “closest” prior art (Lin), the monomer is not in the aqueous pigment mixture. The Examiner states that it is not clear what, if any, difference this would have on the stability results.

Applicants note, however, that Lin uses a monomer that forms a polymerized vinyl aromatic salt. These vinyl aromatic salts

contain a hydrophilic moiety which can ionize in an aqueous liquid vehicle to form ionic charges on the pigment particles and thus result in a stable pigment dispersion. Since Applicants are using monomers that are mostly hydrophobic, which will not help in forming a stable pigment dispersion, it is unnecessary to use the monomer in the preparation of a stable pigment dispersion.

Furthermore, Lin states, in column 9, lines 15-29, as follows:

The monomeric salt can be polymerized alone to form a homopolymer or together with another monomer...to form a copolymer containing the aromatic salt.... The resulting copolymer should be soluble or capable of forming a stable dispersion in the liquid vehicle selected for the ink composition. [col. 9, lines 26-29]

In point of fact, the polymers formed in the Examples of Lin are 100 percent formed from sodium para-styrene sulfonate salt. In contrast, the polymers formed in the present invention are mostly hydrophobic monomers such as methylmethacrylate. See, for example, the polymer compositions in Table 1 on page 17, of the present application. Clearly, it would not matter whether the monomers used in the present examples were added during or after preparation of the pigment dispersion, in contrast to the monomer used by Lin. (Furthermore, the initiator used by Lin is water soluble, potassium persulfate, in contrast to the initiator used in the present examples, AIBN.) Because the polymers used in Lin are primarily hydrophilic, they would not pass the Dry Rub and the Wet Rub Tests used for Table 3, on page 20, of the present invention. Further, the polymers based on ionic salt monomers used in Lin would not pass the stability test recited in claim 1, in which the a dispersion containing the composite pigment particles are added to acetone.

Thus, it may be mentioned in passing that the composite pigment particles of the present invention are fundamentally different than those in the prior art to Lin. In Applicants' invention, the initiator can go to the surface of the pigment first and the monomer mixture, mostly hydrophobic, grows attached to the pigment via the initiator. In contrast, in Lin, the ionic salt monomer, via a

hydrophobic aromatic group, goes to the surface of the pigment and the initiator is later dissolved in the aqueous carrier.

A significant advantage of the present invention is that polymers are not formed unattached in the aqueous carrier as compared to Lin in which any monomer not attached to the pigment might form an unattached polymer. The prevention of unattached polymer is one reason Applicants' dispersions are more stable and that unattached polymer does not precipitate out. Since Lin's polymer is hydrophilic, it is less likely to precipitate out, but on the other hand, the use of the highly ionic polymer would result in the use of the corresponding ink not passing the wet and dry rub test. Hence, Applicants invention is unexpectedly advantageous in providing both stability and resistance to wet and dry rub.

In view of the foregoing, it is believed that this application is now in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,



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